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ary phenomena between two different kinds of matter. It will be seen at once that the order of presentation adopted by Kundt is one which lends itself most easily to simplicity of treatment, and is not at all concerned with the logical development of the subjects. Throughout the whole book all mathematical points are avoided and the utmost required is a most elementary knowledge of geometry. There is no discussion whatever as to our mode of understanding what is meant by mass or force, and no attempt is made to show the logical connection between various subjects. As one reads the lectures one is struck with their clearness of thought, the beauty and vigor of expression, but above all with the fact that from the standpoint of interest to the class it would be impossible to present the subject in a better manner. All difficulties seem to vanish and the student is led from one phenomenon to another, and back again to more complex illustrations of the former, until all the essential facts of the subject are brought before him. If the treatment of the subjects of electricity and magnetism is analyzed, it is seen to be of the same general character as that of mechanics. There are a few chapters on the subject of electrostatic phenomena followed by a discussion of magnetism; then the ideas of electrostatic potential and capacity are introduced, and this leads to a discussion of electric currents. Special emphasis is laid throughout the whole book upon the description of instruments for measurement and for ordinary laboratory use, and the question of the development of ideas is in many cases subordinated to this. A marked illustration is afforded by the fact that, since an induction coil is ordinarily used in producing electric currents through gases, therefore the whole subject of induced currents is taken up before the chapter on conduction through gases. An illustration of the fact that the main object of these lectures is to describe physical phenomena and not explain them is shown by noting that there is no discussion whatever as to the energy of electrostatic or electromagnetic fields or of the reasons underlying electric and magnetic attraction and repulsion, and yet interference with convergent polarized light,

quartz compensators, systems of multiplex telegraphy, etc., are discussed in full.

The publishers of this volume in their preliminary announcement express the belief that it will be useful to those who are following courses in physics as a text-book to accompany their lectures, and also to the scholar in general as an introduction to physical phenomena. They say, moreover, that every one who is familiar with the teaching of physics will receive, as he reads the book, continual pleasure from the elegant and original method of presentation of facts already known to him. These statements of the publishers fall short of the whole truth. There is no book at the present time, so far as known to the reviewer, which presents the subject of physics in such an attractive manner, and a translation of it in English would be of the greatest use in many colleges and schools. To the teacher of physics the great interest of the book lies in the fact that one has here an opportunity of seeing how a great master in the art of lecturing prepared his course; and, further, because he can not fail to learn many ways by which the subject may be made more interesting to his class and at the same time less difficult.

J. S. AMES.

THE JOHNS HOPKINS UNIVERSITY.

Disinfection and the Preservation of Food.

By SAMUEL RIDEAL, D.Sc. New York, John Wiley and Sons. 8 vols., 504 pages, illustrated. \$4.00.

THIS valuable work gives in convenient form the latest information respecting disinfection and the preservation of food. The greater part of the work is devoted to the subject of disinfection, and is so presented as to make it possible not only to carry this important process on on a large scale for public purposes, but also in a small way in private families. The various substances used for disinfection are described and their methods of application explained.

The different methods are grouped under the heads 'Mechanical Disinfection,' 'Sterilization by Heat' and 'Chemical Disinfectants.' Both sterilization by heat and the use of chemical disinfectants are also employed in the

preservation of food. Chemical disinfectants are described under the heads of 'Metallic Salts,' 'Organic Substances' and 'Compounds Related to the Alcohols.'

Methods of disinfection are described as related to towns and municipalities and as personal and internal disinfection. The chapter on the preservation of food is only a small part of the work and is not nearly so valuable as the part devoted to disinfection pure and simple. A résumé of legal statutes and regulations is also given and a short and necessarily brief account is given of the methods of analysis.

Of great interest is the discussion of those substances used both as disinfectants and as food preservatives. Many of these are described as non-poisonous, in such a way as to mislead the careless reader.

A careful reading of the article on fluorides would not warrant the apparent recommendation of it as a substance suitable for addition to food products.

Inasmuch as acetate of alumina has lately been used to a very large extent in sausages imported into this country, it is interesting to read, on page 175, the statement referring to this substance: 'It would doubtless be useful for surgical dressings but is unnecessary and unsafe as a disinfectant.'

In general it may be assumed that substances which are valuable for surgical dressings are not as a rule proper substances to be added to foods.

The salts of copper and zinc belong also to this class of bodies, and while their use as disinfectants is praiseworthy, their presence in food products is at least suspicious.

Other well-known substances belonging to both classes are salicylic and benzoic acids and their salts, sulphurous acid and its salts, and formaldehyde.

In regard to the preservation of food by these reagents the general tendency of Rideal's work is to discourage their use, and this tendency must, it seems to me, be commended by all thoughtful students of hygiene and nutrition. In spite of this general tendency, however, the department committee of the English government, while prohibiting absolutely

the use of formaldehyde or preparations thereof in foods, recommends that salicylic acid may be used in quantities not greater than one grain per pound, except in milk, from which all preservatives of every kind are excluded. Cream and butter, however, are allowed to carry boric acid or borax; in the case of the former, in quantities not to exceed .25 per cent. of boric acid or its equivalent in borax; in the case of the latter, not to exceed .5 per cent. of boric acid or its equivalent in borax. In the case of foods intended for infants and invalids, however, all preservatives are to be excluded. At the International Congress of Hygiene at Brussels, 1903, resolutions were passed in favor of the total abolition of preservatives in all kinds of foods. This, however, as is seen, includes salt, sugar, wood smoke, etc., which have been in use from time immemorial and hence such a recommendation is too drastic (page 423).

The summary of facts respecting food preservation by chemicals is a very valuable part of this excellent work.

H. W. WILEY.

SCIENTIFIC JOURNALS AND ARTICLES.

THE May number of *The American Journal of Science* contains the following articles: 'Recent Changes in the Elevation of Land and Sea in the Vicinity of New York City,' by G. W. Tuttle; 'Geology of Brome Mountain, one of the Monteregian Hills,' by J. A. Dresser; 'Crystallization of Molybdenite,' by A. J. Moses; 'Behavior of Typical Hydrous Chlorides when Heated in Hydrogen Chloride,' by F. A. Gooch and F. M. McClenahan; '*Stegomus Longipes*, a New Reptile from the Triassic Sandstones of the Connecticut Valley,' by B. K. Emerson and F. B. Loomis; 'Note on the Probable Footprints of *Stegomus Longipes*,' by R. S. Lull; 'Canyon City Meteorite from Trinity County, California,' by H. A. Ward; 'Two Microscopic-Petrographical Methods,' by F. E. Wright; 'Denudeating Effect of Rotation in Case of Air Stored over Water,' by C. Barus and A. E. Watson.